

# SEQUENCE LISTING

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 The Government of the United States of America  
 as represented by the Secretary of the  
 Department of Health and Human Services

<120> Mutated Anthrax Toxin Protective Antigen Proteins That  
 Specifically Target Cells Containing High Amounts of  
 Cell-Surface Metalloproteinases or Plasminogen  
 Activator Receptors

<130> 015280-405100US

<140> US 10/088,952  
 <141> 2002-03-22

<150> US 60/155,961  
 <151> 1999-09-24

<150> WO PCT/US00/26192  
 <151> 2000-09-22

<160> 28

<170> PatentIn Ver. 2.1

<210> 1  
 <211> 4  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: furin-like  
 protease cleavage sequence

<400> 1  
 Arg Lys Lys Arg  
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<210> 2  
 <211> 8  
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 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: matrix  
 metalloproteinase (MMP)-recognized cleavage site,  
 gelatinase favorite substrate sequence

<400> 2  
 Gly Pro Leu Gly Met Leu Ser Gln  
 1 5

<210> 3  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:matrix  
          metalloproteinase (MMP)-recognized cleavage site,  
          gelatinase favorite substrate sequence

<400> 3  
Gly Pro Leu Gly Leu Trp Ala Gln  
  1                  5

<210> 4  
<211> 9  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:tissue-type  
          plasminogen activator (t-PA) and urokinase-type  
          (u-PA) recognized cleavage site, physiological  
          substrate sequence

<400> 4  
Pro Cys Pro Gly Arg Val Val Gly Gly  
  1                  5

<210> 5  
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<212> PRT  
<213> Artificial Sequence

<220>  
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          plasminogen activator (u-PA)-recognized cleavage  
          site, favorite sequence

<400> 5  
Pro Gly Ser Gly Arg Ser Ala  
  1                  5

<210> 6  
<211> 7  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:urokinase-type  
          plasminogen activator (u-PA)-recognized cleavage  
          site, favorite sequence

<400> 6  
Pro Gly Ser Gly Lys Ser Ala  
  1                  5

<210> 7  
<211> 7  
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<220>  
<223> Description of Artificial Sequence:tissue-type  
plasminogen activator (t-PA)-recognized cleavage  
site, favorite sequence

<400> 7  
Pro Gln Arg Gly Arg Ser Ala  
1 5

<210> 8  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:5' primer F

<400> 8  
aaaggagaac gtatatga

18

<210> 9  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:phosphorylated  
primer R1

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated t

<400> 9  
ngagttcgaa gatttttgtt ttaattctgg

30

<210> 10  
<211> 52  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:mutagenic  
phosphorylated sequence primer H1

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated g

<400> 10  
ngaccattag gaatgtggag tcaaagtaca agtgctggac ctacggttcc ag

52

<210> 11  
<211> 21  
<212> DNA  
<213> Artificial Sequence

<220>  
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R2

<400> 11  
acgtttatct cttattaaaa t

21

<210> 12  
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<212> DNA  
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<220>  
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mutagenic primer H2

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<221> modified\_base  
<222> (1)  
<223> n = phosphorylated g

<400> 12  
ngaccattag gattatgggc acaaagtaca agtgctggac ctacggttcc ag

52

<210> 13  
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<212> DNA  
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<220>  
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reverse primer R1

<220>  
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<222> (1)  
<223> n = phosphorylated t

<400> 13  
nggtgagttc gaagattttt gttttaattc tgg

33

<210> 14  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:mutagenic  
phosphorylated primer H1

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated t

<400> 14  
ngtccaggaa gagtagttgg aggaagtaca agtgctggac ctacggttcc ag

52

<210> 15  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:encoded by  
mutagenic phosphorylated primer H1

<400> 15  
Cys Pro Gly Arg Val Val Gly Gly  
1 5

<210> 16  
<211> 46  
<212> DNA  
<213> Artificial Sequence

<220>  
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mutagenic primer H2

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated g

<400> 16  
ngaagtggaa gatcagcaag tacaagtgct ggacctacgg ttccag

46

<210> 17  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:encoded by  
phosphorylated mutagenic primer H2

<400> 17  
Gly Ser Gly Arg Ser Ala  
1 5

<210> 18  
<211> 46  
<212> DNA  
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mutagenic primer H3

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated g

<400> 18  
ngaagtggaa aatcagcaag tacaagtgct ggacctacgg ttccag

46

<210> 19  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:encoded by  
phosphorylated mutagenic primer H3

<400> 19  
Gly Ser Gly Lys Ser Ala  
1 5

<210> 20  
<211> 46  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:phosphorylated  
mutagenic primer H4

<220>  
<221> modified\_base  
<222> (1)  
<223> n = phosphorylated c

<400> 20  
nagagaggaa gatcagcaag tacaagtgct ggacctacgg ttccag

46

<210> 21  
<211> 6  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:encoded by  
phosphorylated mutagenic primer H4

<400> 21  
Gln Arg Gly Arg Ser Ala  
1 5

<210> 22  
<211> 5  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:consensus  
sequence minimized best substrate for u-PA

<400> 22  
Ser Gly Arg Ser Ala  
1 5

<210> 23  
<211> 14  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA sequence at  
"furin loop"

<400> 23  
Asn Ser Arg Lys Lys Arg Ser Thr Ser Ala Gly Pro Thr Val  
1 5 10

<210> 24  
<211> 19  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA-U1 sequence  
at "furin loop"

<400> 24  
Asn Ser Pro Cys Pro Gly Arg Val Val Gly Gly Ser Thr Ser Ala Gly  
1 5 10 15

Pro Thr Val

<210> 25  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA-U2 sequence  
at "furin loop"

<400> 25  
Asn Ser Pro Gly Ser Gly Arg Ser Ala Ser Thr Ser Ala Gly Pro Thr  
1 5 10 15

Val

<210> 26  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA-U3 sequence  
at "furin loop"

<400> 26  
Asn Ser Pro Gly Ser Gly Lys Ser Ala Ser Thr Ser Ala Gly Pro Thr  
1 5 10 15  
Val

<210> 27  
<211> 17  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA-U4 sequence  
at "furin loop"

<400> 27  
Asn Ser Pro Gln Arg Gly Arg Ser Ala Ser Thr Ser Ala Gly Pro Thr  
1 5 10 15  
Val

<210> 28  
<211> 13  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence:PA-U7 sequence  
at "furin loop"

<400> 28  
Asn Ser Pro Gly Gly Ser Thr Ser Ala Gly Pro Thr Val  
1 5 10